

## **4.8 HAZARDS AND HAZARDOUS MATERIALS**

This section addresses potential impacts associated with the physical effects of the site due to the historic storage fuel oil within the boundaries of the subject site. Any potential site contamination, including soil and groundwater, is discussed within this section. Impacts would not differ based on whether the proposed facility operates as a stand-alone or co-located facility, and thus all impacts discussed below apply to both scenarios. Since the REIR, the project site boundaries have changed and now include Tank 2 and exclude the southeast tank. Information contained in this section is based on the *Huntington Beach Generating Station Phase II Environmental Site Assessment* (CH2M HILL 1996), the *Site Investigation Report for Soil and Groundwater, Huntington Beach Generating Station, Huntington Beach, California* (Woodward-Clyde 1998), the *Preliminary Hazardous Materials Assessment for the Southeast Coastal Redevelopment Plan* (RBF Consulting 2001), the *Environmental Assessment for the Southern California Edison Huntington Beach Fuel Oil Storage Tank Removal Project* (Arthur D. Little, Inc. 2000), *Soil and Groundwater Hazardous Materials Investigation Report for Huntington Beach Seawater Desalination Plant* (Poseidon Resources Corporation 2007b), the *Spill Prevention and Response Plan for Huntington Beach Seawater Desalination Plant* (Poseidon Resources Corporation 2007c), and the Focused Site Investigation Report (Bryan A. Stirrat & Associates, Inc 2002).

### **EXISTING CONDITIONS**

#### **PROPOSED DESALINATION FACILITY SITE**

##### **On Site**

The subject site, formerly owned and operated by Southern California Edison (SCE), is currently developed with three fuel oil storage tanks (two at the desalination facility area and one at the product water storage tank area). These three tanks are designated as Tank 1, located on the northwestern portion of the site (formerly referred to as the “West Fuel Oil Storage Tank”), Tank 2, located in the northeastern portion of the site (formerly referred to as the “North Fuel Oil Storage Tank”), and Tank 3, located on the eastern center portion of the site (formerly referred to as the “South Fuel Oil Storage Tank”). All three tanks are 205 feet in diameter and 40 feet in height (Poseidon Resources Corporation 2007b and Brian A. Stirrat & Associates 2002). Tank 1 is empty and clean, however, it has a barrel capacity of 205,813 (8.64 million gallons). Tank 2 contains approximately 2 feet of aged fuel oil (level gauge reading), or approximately 1,112 barrels of fuel oil. However, it has a total tank capacity of 220,000 barrels (8.43 million gallons) of fuel (Bryan A. Stirrat & Associates, Inc 2002). The amount of fuel remaining in Tank 3 is unknown. The exact amounts of remaining fuel within all the storage tanks would not be known until the tanks are opened and inspected. Containment berms of 10 to 15 feet in height surround the perimeter of each tank. The fuel oil tanks are constructed of a thin metal external shell and an internal insulated layer approximately 2 inches thick. According to the Soil and Groundwater Hazardous Materials Investigation Report (Poseidon Resources Corporation 2007b), laboratory test results identified both friable and non-friable asbestos-containing materials throughout the sites for Tank 1 and Tank 2 and associated pipelines for Tank 1. Since Tank 3 was constructed during the same time using the same construction technology, it is very likely that asbestos-containing materials would also be present.

In October and November 1996, CH2M Hill advanced a total of 19 borings within the boundaries of the former fuel oil storage facility in which the subject site is located (4 borings per fuel oil tank and

three borings adjacent to the distillate storage tank). Fifty soil samples and five groundwater samples were collected from the 19 borings. Soil samples were collected from depths near the ground surface (0.5 feet below ground surface (bgs)) and also at 5-foot intervals to depths of approximately 10 feet bgs. Groundwater was encountered at approximately 7 to 8 feet bgs within the subject site vicinity. Thirty-four of the fifty soil samples and three of the five groundwater samples were taken surrounding tanks 1, 2, and 3 (CH2M Hill 1996).

For the Phase II Assessment, CH2M Hill used the Los Angeles Regional Water Quality Control Board (LARWQCB) *Interim Site Assessment and Cleanup Guidebook* (1996) as a conservative screening criterion for evaluation of analytical results. All soil samples were analyzed for total petroleum hydrocarbons-diesel (TPH-D). TPH-D levels exceeded the maximum soil screening level of 1,000 mg/kg (LARWQCB 1996), with samples as high as 65,000 milligrams per kilogram (mg/kg) in the vicinity of Tank 1 and 1,200mg/kg near Tank 2, both at 0.5 feet bgs. TPH-D was detected at concentrations of 0.51 mg/liter (L) in groundwater collected near Tank 1 and 0.74 mg/L in the groundwater collected near Tank 2.

### **Surrounding Uses**

Additional soil and groundwater samples collected by CH2M HILL within the fuel oil storage facility but outside of project site boundaries were also analyzed for TPH-D and volatile organic compounds (VOCs). TPH-D was detected above screening criteria in sampling locations to the south of the subject site, with levels as high as 5,200 mg/kg. However, TPH-D was not detected in groundwater samples taken from south of the project site.

A soil and groundwater investigation was performed for the AES Huntington Beach Generating Station (HBGS) (Woodward-Clyde 1998), located immediately southwest of the project site. It was concluded that the screening criteria for petroleum-impacted soils was not exceeded, while several metals (including antimony, arsenic, cadmium, cobalt, lead, mercury, selenium, silver, aluminum, iron, nickel, vanadium, copper, and molybdenum) exceeded average metal concentrations in soil for California. Numerous VOCs exceeded state and federal maximum contaminant levels (MCLs) in groundwater, while no semi-volatile organic compounds (SVOCs) were detected above potential "threshold" concentrations in groundwater sampled at the HBGS. Various metals (including arsenic, thallium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, silver, and selenium) were also found to exceed existing MCLs. Other groundwater contaminants exceeding state and federal MCLs include fluoride, chloride, sulfate, and total dissolved solids (TDS).

The Pacific Holdings facility is another petroleum-related storage tank facility that is situated within the project vicinity. The Pacific Holdings tank farm is located east of the subject site and consists of three 21-million-gallon-capacity fuel oil storage tanks. SCE completed a baseline tank study that indicates that TPH levels of up to 7,500 mg/kg exist on site, resulting from occasional spraying of oil on the soil for corrosion protection.

The Ascon/Nesi Landfill, situated east of the subject site, was utilized primarily as a dumping ground for oil drilling wastes until its closure in 1984. Evidence of petroleum- and hydrocarbon-related contamination exists throughout the site primarily in the form of lagoons filled with oil-drilling waste liquids. The Department of Toxic Substances Control (DTSC) has determined there are a number of chemicals present from past operations at the site that are above DTSC's protective standards. DTSC has previously investigated and overseen several specific response actions at the site. To further investigate the nature and extent of contamination at the site, DTSC is currently

proposing the removal of tarry and oily waste from the site as an interim removal measure. This removal will also help determine an appropriate long-term site-wide cleanup (DTSC 2009a).

The site contains various types of liquid and solid waste in buried pits, surface piles of concrete, rebar, and other construction debris and open and buried lagoons (ponds). There are five visible lagoons (referred to as Lagoons 1 through 5) covering about 30% of the site, one covered pit, and seven former pits that are no longer visible (three in the northwest corner and four in the southeast corner of the site). DTSC has approved a proposed Interim Removal Measure (IRM) planned for 2010 at the Ascon Landfill site that includes removal and disposal, or, if feasible, recycling of the tarry materials from two interior lagoons in the southwest zone of the Ascon site that received oil production waste during the landfill's operation<sup>1</sup>. The purpose of this action is to enable assessment of the materials underneath the tarry materials in the Lagoons. Ascon monitoring data from outside of the landfill property do not indicate migration of contaminated groundwater from the landfill site.

CH2M Hill performed groundwater sampling near the northern border of the proposed project site and the Ascon/Nesi Landfill. TPH-D and VOCs were not detected in the groundwater samples collected, downgradient of the Ascon/Nesi Landfill site (*Huntington Beach Generating Station Phase II Environmental Site Assessment* (CH2M HILL 1996)). Based on this information, it appears that groundwater under the desalination facility site would not be contaminated by hydrocarbon products originating from the Ascon Landfill.

## **OFF-SITE PIPELINES AND UNDERGROUND PUMP STATIONS**

### **Proposed Pipeline Alignments**

The majority of the pipeline alignments would occur within existing public streets, easements, or other rights-of-way (ROWs) in urbanized areas. Although precise pipeline alignments may be modified during final engineering analyses, the conceptual pipeline alignments are shown in Figure 3-3a and 3-3b.

As noted above, Ascon monitoring data from outside of the landfill property do not indicate migration of contaminated groundwater from the landfill site, such as on Hamilton Street where segments of the offsite pipelines are proposed. However, as noted in Section 4.9 of this SEIR, mitigation measures are proposed to ensure that any contamination from the Ascon site if encountered during construction is properly handled.

Portions of the pipeline alignments are proposed to be installed within areas of Edison Community Center (Huntington Beach), Costa Mesa Country Club (Costa Mesa), and Fairview State Hospital (Costa Mesa). No areas of existing hazardous materials contamination are known to exist along the proposed pipeline alignments.

### **OC-44 Pump Station**

The OC-44 underground booster pump station is proposed to be located within an area of unincorporated Orange County, approximately 1.5 miles south of the University of California, Irvine,

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<sup>1</sup> Department of Toxic Substance Control, Ascon Landfill Draft Interim Removal Measure Workplan and Mitigated Negative Declaration, October 2009. (accessed at: [http://www.dtsc.ca.gov/SiteCleanup/Projects/upload/Ascon\\_FS\\_Measure\\_Workplan.pdf](http://www.dtsc.ca.gov/SiteCleanup/Projects/upload/Ascon_FS_Measure_Workplan.pdf))

and 0.5 mile north of the San Joaquin Reservoir. The proposed OC-44 pump station site is surrounded by open space to the north; open space and residential to the east; water conveyance facilities, open space, and residential to the west; and open space to the south. As this site is undeveloped, it is not expected to contain hazardous materials.

### **Coastal Junction Pump Station**

The Coastal Junction underground booster pump station is proposed within the parking lot of St. Paul's Greek Orthodox Church, located at 4949 Alton Parkway in the City of Irvine. These facilities are also currently housing Crean Lutheran High School, with an enrollment of over 300 students. The High School proposes to build a permanent campus in another location in the City of Irvine, and has received initial approvals from the City for the permanent site. It is likely that the school will be relocated from the St. Paul's site prior to construction of the booster pump station.

The pump station would be constructed within the north/northwestern portion of the church parking lot, in an area used for both parking and volleyball activities. The footprint of the proposed underground pump station would be approximately 100 feet by 100 feet, requiring a construction easement of 125 feet by 125 feet. The pump station site is surrounded by the St. Paul's Church to the south, the Woodbridge Village Association to the west, an apartment complex to the east, and open space to the north. As this pump station site is developed as a parking lot adjacent to a church, hazardous materials are not anticipated to exist on site.

### **Magnolia and Brookhurst Pump Station**

The Magnolia and Brookhurst pump stations are located at the intersections of Orangewood Avenue/Magnolia Street and Brookhurst Street/Bixby Avenue in the City of Garden Grove (see Figure 3-3b). The pump stations would be constructed within a disturbed right-of-way. The footprint of the proposed underground pump stations would be approximately 100 feet by 100 feet, requiring a construction easement of 125 feet by 125 feet. The pump station sites are surrounded by an open concrete channel, paved roads and a variety of land uses including residential and commercial uses. As both pump stations sites are developed and/or disturbed, hazardous materials are not anticipated to exist on these sites.

### **Bristol Pump Station**

The Bristol Pump Station is located in the City of Santa Ana to the north of the Bear Avenue/Seegerstrom Avenue intersection (see Figure 3-3b). The pump station would be constructed within an area including recreational uses. The footprint of the proposed underground pump station would be approximately 100 feet by 100 feet, requiring a construction easement of 125 feet by 125 feet. The pump station site is surrounded by developed park land, paved roads and a residential uses. Since the pump station site is developed and/or disturbed, hazardous materials are not anticipated to exist on these sites.

### **OC-44 Bypass Station**

The OC-44 Bypass Station is located in the City of Costa Mesa in Santa Ana Avenue southwest of Bristol Street intersection (see Figure 3-3b). The footprint of the proposed underground pump station would be approximately 12 feet by 12 feet by 12 feet. The site is surrounded by developed

recreational uses, paved roads and residential uses. Since the site is developed and/or disturbed, hazardous materials are not anticipated to exist on these sites.

### **REGULATORY FRAMEWORK**

Federal, state, and local laws regulate the management of hazardous materials. Implementation of these laws and the management of hazardous materials are regulated independently of CEQA through programs administered by various agencies at the federal, State, and local levels. A summary of applicable hazardous materials laws and regulations that could apply to the proposed project include, but are not limited to, the following:

**Federal:** Several federal agencies regulate hazardous materials. These regulatory agencies include the Environmental Protection Agency (EPA), Department of Labor (Federal Occupational Health and Safety Administration [OSHA]), and the Department of Transportation (DOT). Applicable federal regulations are contained primarily in Titles 10, 29, 40, and 49 of the Code of Federal Regulations (CFR). The EPA is the primary federal agency responsible for implementation and enforcement of hazardous materials regulations. In most cases, enforcement of environmental laws and regulations established at the federal level is delegated to State and local environmental regulatory agencies.

**State:** Primary state agencies with jurisdiction over hazardous chemical materials management are the Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board (RWQCB). Other state agencies involved in hazardous materials management are the Department of Industrial Relations (State OSHA implementation), state Office of Emergency Services (OES California Accidental Release Prevention implementation), Department of Fish and Game (DFG), Air Resources Board (ARB), Department of Transportation (Caltrans), State Office of Environmental Health Hazard Assessment (OEHHA—Proposition 65 implementation), and the California Integrated Waste Management Board (CIWMB). The enforcement agencies for hazardous materials transportation regulations are the California Highway Patrol (CHP) and Caltrans. Hazardous materials waste transporters are responsible for complying with all applicable regulations.

The California EPA (Cal/EPA) has broad jurisdiction over hazardous materials management in the state. Within Cal/EPA, the DTSC has primary regulatory responsibility for hazardous waste management and cleanup. Enforcement of regulations has been delegated to local jurisdictions that enter into agreements with DTSC for the generation, transport, and disposal of hazardous materials under the authority of the Hazardous Waste Control Law. Along with the DTSC, the RWQCB is responsible for implementing regulations pertaining to management of soil and groundwater investigation and cleanup. RWQCB regulations are contained in Title 27 of the California Code of Regulations (CCR). Additional state regulations applicable to hazardous materials are contained in Title 22 of the CCR. Title 26 of the CCR is a compilation of those sections or titles of the CCR that are applicable to hazardous materials.

A hazardous material is any substance that possesses qualities or characteristics that could produce physical damage to the environment and/or cause deleterious effects upon human health (Title 22, CCR). The Hazardous Materials Management Act (HMMA) requires that businesses handling or storing certain amounts of hazardous materials prepare a Hazardous Materials Business Plan (HMBP), which includes an inventory of hazardous materials stored on site (above specified quantities), an emergency response plan, and an employee-training program. Businesses that use, store, or handle 55 gallons of liquid, 500 pounds of a solid, or 200 cubic feet of a

compressed gas at standard temperature and pressure require HMBPs. Plans must be prepared prior to facility operation and are reviewed/updated biennially (or within 30 days of a change).

The oversight of hazardous materials release sites often involves several different agencies that may have overlapping authority and jurisdiction. The DTSC and RWQCB are the two primary state agencies responsible for issues pertaining to hazardous materials release sites. Air quality issues related to remediation and construction at contaminated sites are also subject to federal and state laws and regulations that are administered at the local level. Investigation and remediation activities that would involve potential disturbance or release of hazardous materials must comply with applicable federal, state, and local hazardous materials laws and regulations.

The DTSC has developed standards for the investigation of sites where hazardous materials contamination has been identified or could exist based on current or past uses. The standards identify approaches to determine if a release of hazardous wastes/substances exists at a site and delineate the general extent of contamination; estimate the potential threat to public health and/or the environment from the release and provides an indicator of relative risk; determine if an expedited response action is required to reduce an existing or potential threat; and complete preliminary project scoping activities to determine data gaps and identify possible remedial action strategies to form the basis for development of a site strategy.

**LOCAL:** The Environmental Health Division was designated by the State Secretary for Environmental Protection on January 1, 1997 as the “CUPA” for the County of Orange. CUPA is the local administrative agency that coordinates six programs (Hazardous Waste, Underground Storage Tanks (UST), Aboveground Storage Tanks (AST), Hazardous Materials Disclosure (HMD), Business Plan and California Accidental Release Program (CalARP)) regulating hazardous materials and hazardous wastes in Orange County. County and City Fire Agencies within Orange County have joined the CUPA as Participating Agencies, administering one or more of the six CUPA programs in their jurisdictions. In most cities, Environmental Health administers the Hazardous Waste, Underground Storage Tank, and Aboveground Storage Tank programs while the Fire Agencies administer the other three elements listed above.

The City of Huntington Beach Specification 431-92, Soil Clean-Up Standard (City Specification 431-92), dated July 30, 1992, governs investigation and remedial efforts of contaminated soils. The Hbfd is the local oversight agency for soil remediation.

## **IMPACTS**

Significance thresholds in this section are based on the CEQA Guidelines Appendix G, Environmental Checklist Form, as indicated below:

### **SIGNIFICANCE CRITERIA**

Under the CEQA Guidelines (14 CCR 15000 et seq.), a potentially significant impact in regards to hazards and hazardous materials would occur if the project caused one or more of the following to occur:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, the project would result in a safety hazard for people residing or working in the project area (Note: This issue is discussed in Section 7.0, Effects Found Not to be Significant);
- For a project within the vicinity of a private airstrip, the project would result in a safety hazard for people residing or working in the project area (Note: This issue is discussed in Section 7.0, Effects Found Not to be Significant);
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (Note: This issue is discussed in Section 7.0, Effects Found Not to be Significant); and/or
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands (Note: This issue is discussed in Section 7.0, Effects Found Not to be Significant).

For a discussion of short-term hazards/hazardous materials impacts in regards to remediation, construction, and demolition, refer to Section 4.9, Construction-Related Impacts.

## **LONG-TERM OPERATIONAL IMPACTS**

### **Proposed Desalination Facility Site**

#### *Existing On-Site and Off-Site Contamination*

The proposed desalination project will not result in long-term impacts in regards to existing on- and off-site soil and groundwater contamination.

The project site has been identified on various regulatory databases as being contaminated from the release of hazardous substances in the soil or groundwater. Prior to the development of the site, the project would be required to undergo remediation and cleanup activities. If contamination at any specific site were to exceed regulatory action levels, the project will be required to undertake remediation procedures prior to grading and development under the supervision of appropriate regulatory oversight agencies (e.g., Huntington Beach Fire Department, Orange County Environmental Health Division, Department of Toxic Substances Control, or Regional Water Quality

Control Board), depending on the nature of any identified contamination. Through compliance with local, state and federal requirements, contaminated sites will undergo remediation activities prior to development activities and impacts would be reduced to less than significant. In addition, demolition of the storage tanks would also involve the abatement of asbestos and lead-based paint, if detected. The majority of contaminants both on and off site (including the Ascon/Nesi Landfill) are petroleum based and are not considered toxic or acutely hazardous. The proposed project is expected to have a beneficial impact in regards to long-term hazards and hazardous materials.

#### Project Operation

The proposed project involves the implementation of a 50-million-gallon-per-day seawater desalination facility and would involve the storage, handling, and use of hazardous materials. Hazardous materials would be utilized for three components of desalination facility operation: 1) periodic cleaning of the RO membranes that filter impurities from seawater; 2) treatment of potable product water; and 3) storage of diesel fuel for emergency backup electricity generators at the off-site underground pump stations.

Federal, state and local regulations control the transportation, use, storage, generation and disposal of hazardous materials to minimize potential health and environmental hazards that could occur through accidental spills or leakage. Pursuant to Chapter 6.95, Division 20 of the California Health and Safety Code, an annual business plan, more commonly referred to as a Business Emergency Plan (BEP) and Hazardous Materials Inventory will be prepared by the Project for submittal to the City of Huntington Beach Certified Unified Program Agency. In addition to identifying hazardous substances, the BEP includes details that facilitate coordination and emergency planning with on- and off-site response officials and facilities in the event of an emergency.

The Certified Unified Program Agency (CUPA) is the local administrative agency that oversees regulation of hazardous materials. In the City of Huntington Beach, the CUPA is the Orange County Department Environmental Health. The Orange County DEH inspects businesses or facilities that handle or store hazardous materials, generate hazardous waste, generate medical waste, and own or operate underground storage tanks. The Orange County DEH also oversees the California Accidental Release Program (CalARP) and hazardous materials disclosure (Emergency Planning Community Right to Know Act), including hazardous materials business plans.

The City of Huntington Beach implements a Hazardous Materials Disclosure Program to help emergency responders identify, monitor, and assist business operations using or storing hazardous materials. The intent of the program is to reduce the probability of accidents involving hazardous materials and to allow the City to handle emergency incidents more effectively which will reduce the impact of emergency incidents involving hazardous materials. As the City's primary emergency response organization, the Huntington Beach Fire Department manages the Hazardous Materials Disclosure program within the City limits. The project will be required to complete and submit a Hazardous Materials Disclosure package to the City Fire Department, and will be periodically required to submit updates. The City has a program in place to verify the accuracy of the information submitted by each Project through a periodic inspection program, and gives guidance on prevention strategies to reduce the potential for hazardous materials incidents. The program is coordinated through a contractual agreement with the Orange County Health Care Agency's Certified Unified Program Agency (CUPA), who invoices and collects disclosure-related fees. The Project will be required to submit a Hazardous Materials Disclosure package, consistent with the City of Huntington Beach Hazardous Materials Disclosure Program requirements.

The proposed project also involves transportation of the chemicals listed in Table 4.8-1 to the site. The delivery of chemicals to the site will be completed along City roadways located within the vicinity of the project site. The one-way travel distance from Interstate 405 is approximately 4 miles. This delivery route passes, or is located within ¼ mile of, schools, a park, and residential neighborhoods. Transportation of hazardous materials will comply with all DOT, California Department of Transportation (Caltrans), US EPA, DTSC, California Highway Patrol, and California State Fire Marshal regulations.

#### RO Membrane Cleaning Solution

The accumulation of silts or scale on the RO membranes causes fouling, which reduces membrane performance (refer to Section 3.0, Project Description). The membranes would be periodically cleaned to remove these foulants and extend membrane life. Normal cleaning frequency is twice per year. A chemical cleaning solution is circulated through the membranes to clean them. The reverse osmosis system trains would be cleaned using a combination of chemicals such as industrial soaps (e.g., sodium dodecylbenzene, which is frequently used in commercially available soaps and toothpaste) and weak solutions of acids and sodium hydroxide. The cleaning process includes two steps: first, circulating a number of cleaning chemicals in a predetermined sequence through the membranes; and second, rinsing the cleaned membranes with clean water (permeate) to remove the waste cleaning solutions and prepare the membranes for normal operation. The actual cleaning chemicals used would be based on the observed operation and performance of the system once in operation.

Each of the 14 membrane RO trains would be cleaned on average two times per year. During cleaning, the membrane train would be taken out of service and the cleaning solution circulated through the membranes to remove the accumulated fouling materials. In addition, chemicals would be used for cleaning of pretreatment facilities. Chemicals to be used for membrane cleaning include:

- **Citric acid, 2% solution:** The Material Safety and Data Sheet (MSDS) for citric acid states that acute overexposure would cause eye/skin irritation; irritation of the respiratory tract if inhaled; and nausea, vomiting, cramps, and acidic irritation of mouth and throat if ingested.
- **Sodium hydroxide B, 0.1% solution:** According to the MSDS for this material, acute exposure may cause severe burns to exposed tissues (including the eyes), injury to the entire respiratory tract if inhaled, and severe injury to the digestive system if ingested.
- **Sodium tripolyphosphate B, 2% solution:** According to the MSDS for this material, acute overexposure would cause minimal to moderate irritation to the eyes. Human industrial experience has not shown this chemical to be an inhalation hazard.
- **Sodium dodecylbenzene B, 0.25% solution:** According to the MSDS for this material, sodium dodecylbenzene would cause irritation to exposed tissues (including the skin/eyes), and irritation to the respiratory or digestive systems, if inhaled or ingested.

- **Sulfuric acid B, 0.1% solution:** The MSDS for sulfuric acid indicates that acute overexposure would result in burns to exposed area such as the eyes, skin, and respiratory tract.

The citric acid, sodium hydroxide, sodium tripolyphosphate, and sodium dodecylbenzene would be delivered to the subject site in 50-gallon plastic containers and would be stored in the RO building within concrete enclosures. A drainage system would be provided for chemical evacuation in the event of an accidental spill. As these chemicals would not be used frequently, they would be delivered to the site on an as-needed basis, and no more than one container per chemical would typically be stored or used at one time. Storage for sulfuric acid is described under Product Water Treatment Materials.

The chemicals listed above are nonflammable and would be stored and used at the treatment facility site in quantities below the threshold quantity levels, as defined by the applicable federal, state, and local hazardous materials handling and management regulations, at which they would present a potential for a significant hazard to the public or the environment.

The maximum volume for citric acid, sulfuric acid, and sodium hydroxide, which would be stored on site in liquid form, would be 50 gallons. This volume is below the minimum threshold quantity of 55 gallons defined by the applicable regulations. The sodium tripolyphosphate B and sodium dodecylbenzene B would be delivered and stored in solid form, and the maximum amount of these chemicals stored would be 480 pounds, which is below the most stringent threshold quantity for storing solid hazardous materials (500 pounds).

Mixing of the membrane-cleaning chemicals at the indicated concentrations would not generate flammable substances or a significant amount of hazardous vapor emissions. The chemicals listed above would be stored in the membrane cleaning room of the RO building of the desalination facility and would be used and stored on site only while membrane cleaning is being completed. This room would have an automatic sprinkler system for fire control, and spill containment and control provisions in the storage, handling, and dispensing area of the room.

Product Water Treatment Materials

In addition to the RO membrane-cleaning solution, additional chemicals for water treatment would be used, stored, and handled on site (Table 4.8-1, Product Water Treatment Chemical Usage Summary). A description of each chemical product water treatment is provided below:

**TABLE 4.8-1  
 PRODUCT WATER TREATMENT CHEMICAL USAGE SUMMARY**

CHEMICAL	PURPOSE	NORMAL CONCENTRATION	CHEMICAL (DRY LB/YEAR)	BULK STORAGE CAPACITY (GALLONS)
Sodium Hypochlorite	Prevent Biological Growth	10–12%	Intermittent	Common tank
Coagulant	Enhance Filter Performance	70%	2,971,000	10,000
Flocculant	Enhance Filter Performance	0.5%	34,280	300
Sulfuric Acid	PH adjustment	93%	1,904,000	20,000
Sodium Bisulfate	Remove Chlorine	20–45%	intermittent	300
Carbon Dioxide	Stabilize Product Water	100%	2,522,000	38,000

**TABLE 4.8-1 (CONTINUED)**

CHEMICAL	PURPOSE	NORMAL CONCENTRATION	CHEMICAL (DRY LB/YEAR)	BULK STORAGE CAPACITY (GALLONS)
Limestone	Stabilize Product Water	100%	9,580,000	126,000
Caustic Soda	PH Adjustment	25%	408,000	10,000
Sodium Hypochlorite	Disinfection	10-12%	3,860,000	24,000
Aqueous Ammonia	Disinfection	10-20%	1,097,000	3,000

Source: Poseidon Resources Corporation 2007c.

**Sodium hypochlorite (chlorine):** Chlorine would be delivered in liquid form as a 12% sodium hypochlorite solution. The liquid sodium hypochlorite would be stored in two 10,200-gallon plastic tanks of 12-foot diameter and 12-foot height. The storage tanks would be located within an enclosed concrete containment structure with a 110% spill containment capability. The inner housing of the concrete containment structure would be coated for resistance to chemicals and would be separated or divided from other chemicals to prevent mixing in the event of accidental spillage. Storage tanks would be high-density polyethylene (HDPE) or fiberglass-reinforced polyester (FRP). Piping, pumps, valves, and other ancillary equipment would be manufactured of materials compatible with this chemical and in compliance with applicable city and state regulations. Generally, polyvinyl chloride (PVC) would be used for low-pressure piping, and lined Teflon piping would be used for high-pressure service. All metals except titanium, silver, gold, and platinum would be avoided in pumps and pumping elements, as well as any other piece of equipment that can be expected to come in direct contact with the chlorine solution. No chlorine gas would be present on site. According to the MSDS for sodium hypochlorite, acute overexposure would result in strong irritation to the eyes, skin, and respiratory tract. Inhalation of fumes may cause pulmonary edema, while ingestion would cause burns to the mouth, digestive tract, and abdominal distress. Sodium hypochlorite storage tanks and feed pumps would be located in the chemical storage area.

**Limestone:** Limestone would be delivered in the form of limestone pebbles or fine grains. The limestone would be stored in six 21,000-gallon pressure vessel tanks. Approximately 20% of the RO permeate would feed through the limestone tanks to stabilize the water when blended with the remaining 80% of RO permeate. The materials of construction for storage tanks, conveyance systems, piping systems, and ancillary equipment would be compatible with the recommendation of the limestone supplier and in compliance with applicable City and state regulations.

**Fluoridation:** Fluorosilic acid (also known as Hexafluorosilic acid) in solution strength of approximately 23 to 25% will be used on the project because of its solubility, safety, and availability. Fluorosilic acid is corrosive and may cause fluoride poisoning if ingested in large quantities. Inhalation of vapors may cause lung edema. The bulk liquid will be stored in a corrosive resistant (FRP) tank. Tank will be approximately 5,200 gallons (10 feet diameter by 10 feet high). Chemical feed pumps and lines will be constructed of chemical resistant material. A concrete containment berm will be constructed to contain any possible spills.

**Carbon Dioxide:** The main water treatment applications with carbon dioxide are recarbonation and pH control. During the post treatment process, carbon dioxide is injected into the desalinated water to reduce pH and stabilize the water. Carbon dioxide is less prone to overdosing than sulfuric and other mineral acids, and is safer to handle on site. The carbon dioxide would be stored in two 19,000-gallon pressurized bulk liquid storage tanks (57 feet in length and 7.4 feet in diameter),

consisting of a welded steel pressure vessel designed, constructed, and tested in accordance with the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code and applicable City and state regulations. Although stored as a liquid, carbon dioxide is injected into the water stream as a vapor. No special alloy or plastic distribution piping is required for the carbon dioxide delivery system.

Carbon dioxide has a slightly irritating odor, is colorless, and is slightly heavier than air. At concentrations between 2% and 10%, carbon dioxide can cause nausea, dizziness, headache, mental confusion, increased blood pressure and respiratory rate. Above 8%, nausea and vomiting occur. Above 10%, suffocation and death can occur within minutes. Carbon dioxide displaces oxygen and can cause asphyxiation within confined spaces. Contact with the cold gas can cause freezing of exposed tissue. Moisture in the air can lead to formation of carbonic acid that can irritate the eyes. All forms of carbon dioxide are noncombustible. The carbon dioxide storage tanks and feed systems would be located in the product water storage tank area.

**Coagulant:** A coagulant such as Ferric sulfate would be used as intake water coagulant. Ferric sulfate would be delivered and stored in liquid form. The coagulant would be a 70% concentration of ferric sulfate solution. Storage tanks shall be FRP or high-density cross-linked polyethylene (HDXLPE). Piping, pumps, valves, and other handling equipment would be manufactured, lined, and/or coated with Kynar7 vinylidene plastic, PVC, rubber, glass, ceramic materials, or other materials specifically manufactured for the intended service and in compliance with applicable City and state regulations. Floors, walls, and ancillary equipment subject to splashing would be protected with corrosion-resistant coatings. On-site storage tanks would be placed within an enclosed concrete containment structure with a 110% spill containment capability. The inner housing of the concrete containment structure would be coated for resistance to chemicals and would be separated or divided from other chemicals to prevent mixing in the event of accidental spillage. According to the MSDS for ferric sulfate, acute overexposure would result in irritation to the respiratory system if inhaled; burns, somnolence, diarrhea, tachycardia, shock, acidosis, and hematemesis if ingested; and irritation/corrosion to the eyes. Ferric sulfate storage tanks and feed pumps would be located in the chemical storage area.

**Polymer:** Polymer would be delivered and stored in the form of a dry powder. The polymer would be mixed and aged in a batch tank to prepare for water treatment use. The polymer system would produce an output concentration of a maximum of 0.5%. The materials of construction for storage tanks, pumps, piping systems, and ancillary equipment would be compatible with the recommendation of the polymer supplier and in compliance with applicable City and state regulations. According to the MSDS for polymer, acute exposure would result in mild eye and skin irritation, while inhalation would cause irritation to the nose, eyes, and throat. Polymer storage tank and feed pumps would be located in the chemical storage area.

**Sulfuric Acid:** Sulfuric acid would be delivered and stored in liquid form with a 20% concentration. The sulfuric acid would be stored in a 20,000-gallon steel horizontal tank within an enclosed concrete containment structure with a 110% spill containment capability. The inner housing of the concrete containment structure would be coated for resistance to chemicals and would be separated or divided from other chemicals to prevent mixing in the event of accidental spillage.

The materials of construction for pumps, piping systems, and ancillary equipment would be iron, steel, PVC, or Viton for concentrated sulfuric acid, and glass, lead, or rubber for dilute sulfuric acid, and will be in compliance with applicable City and state regulations. According to the MSDS for

sulfuric acid, acute overexposure would result in burns to any exposed area such as the eyes, skin, and respiratory tract. Sulfuric acid storage tanks and feed pumps would be located in the chemical storage area.

**Sodium Bisulfite:** Sodium bisulfite would be delivered and stored in liquid form and contained in one 300-gallon plastic tank within an enclosed concrete containment structure with a 110% spill containment capability. The inner housing of the concrete containment structure would be coated for resistance to chemicals and would be separated or divided from other chemicals to prevent mixing in the event of accidental spillage. The sodium bisulfite would be a 20% to 45% concentration solution. The materials of construction for storage tanks, pumps, piping systems, and ancillary equipment would be in accordance with the recommendation of the chemical supplier and in compliance with applicable City and state regulations. According to the MSDS for sodium bisulfite, acute overexposure would result in severe burns and irritation to the skin, eyes, and mucous membranes. Inhalation may cause respiratory discomfort, and ingestion would result in burns to the gastrointestinal system and possibly death. Sodium bisulfite storage tanks and feed pumps would be located in the chemical storage area.

**Ammonia:** Ammonia would be delivered and stored in liquid form in a 3,000-gallon tank with a 110% spill containment structure. The storage tank would be constructed of HDPE or FRP. Piping, pumps, valves, and other ancillary equipment would be manufactured of materials compatible with the intended service and in compliance with applicable City and state regulations. PVC would be used for low-pressure conveyance piping, and lined Teflon for high-pressure conveyance piping. According to the MSDS for ammonia, acute overexposure would result in burns to the gastrointestinal tract, skin, eyes, mucous membranes, and respiratory tract. The ammonia storage tank and feed system would be located in the product water pump station area.

**Caustic Soda:** Caustic Soda would be used to provide pH adjustment in the post treatment area. A 10,000 gallon tank made of plastic tank within an enclosed concrete containment structure with a 110% spill containment capability. The inner housing of the concrete containment structure would be coated for resistance to chemicals and would be separated or divided from other chemicals to prevent mixing in the event of accidental spillage. The caustic soda would be a 25% concentration solution. The materials of construction for storage tanks, pumps, piping systems, and ancillary equipment would be in accordance with the recommendation of the chemical supplier and in compliance with applicable City and state regulations. According to the MSDS for caustic soda, acute overexposure would result in severe burns and irritation to the skin, eyes, and mucous membranes. Inhalation may cause respiratory discomfort, and ingestion would result in burns to the gastrointestinal system and possibly death. Sodium bisulfite storage tanks and feed pumps would be located in the chemical storage area.

Feed pumps for sodium hypochlorite, ferric, sulfuric acid, scale inhibitor, caustic soda and sodium bisulfite would be hydraulically actuated diaphragm-type or peristaltic-type, chemical-metering pumps equipped with a variable frequency drive. The polymer pumps would be single-stage, progressive cavity-displacement pumps. Carbon Dioxide is also feed into the post treatment system.

The design incorporates leak and spill containment measures to minimize the risk of upset to both on-site employees and surrounding uses, consistent with all federal, state, county, and City regulations. As stated previously, hazardous materials would be utilized for three components of desalination facility operation: 1) periodic cleaning of the RO membranes that filter impurities from

seawater; 2) treatment of potable product water; and 3) storage of diesel fuel for emergency backup electricity generators at the off-site underground pump stations. Hazardous materials would be stored in concrete containment structures with a 110% spill containment capability. If necessary, the inner housing of the concrete containment structure would be coated for resistance to chemicals, and each structure would be separated or divided from other chemicals to prevent mixing in the case of accidental spillage. Storage tanks would be constructed of appropriate, non-reactive materials, compatible with the recommendations of the supplier of the hazardous material.

In the event of an accidental liquid chemical spill, the chemical would be contained within the concrete containment structure and evacuated through an individual drainage system. The spilled chemical would then be pumped into hazardous waste containment trucks and transported off site for disposal at an appropriate facility. This operation would be completed by a specialized contractor licensed in hazardous waste handling and disposal. Spill notification thresholds would be established and published, and appropriate agencies, such as the City of Huntington Beach Fire and Police departments, would be contacted if necessary. The existing containment berms along the northern and eastern boundaries of the proposed desalination site (which are 10 to 15 feet high) would further minimize the potential release of hazardous materials into the adjacent Huntington Beach Channel and wetlands.

The chemical conveyance piping system connecting chemicals from their storage areas to their points of application would be protected from leaks utilizing one of the following leak protection measures:

- Use of piping with double containment walls to prevent potential chemical leaks from reaching the soil or groundwater
- Installation of chemical conveyance and feed pipelines in designated plastic or concrete trenches that would contain potential leaks and drain the leaking chemical(s) to a designated containment sump or tank, from which the chemical(s) would be evacuated and disposed of in compliance with applicable federal, state, and local codes.

Chemicals would be delivered to the desalination facility by trucks specifically designed and suitable for chemical storage and offloading. On average, less than ten trucks per day is expected to deliver chemicals to the proposed desalination site, which is considered consistent and compatible with the site's designation as an industrial area. The transportation of hazardous materials to the desalination facility would comply with all California Department of Transportation regulations. The facility would utilize registered haulers to further reduce the potential for accidental release or exposure of these hazardous materials to the environment and individuals during transport.

Hazardous waste management, transportation, use, storage, and disposal information and procedures would be processed and approved through the Huntington Beach Fire Department Hazardous Materials Division and other applicable regulatory agencies. The desalination facility operator would develop hazardous waste management and safety plans in accordance with City, Occupational Health and Safety Association (OSHA), and U.S. Environmental Protection Agency (EPA) requirements. In accordance with OSHA, operation of the proposed facility would require the preparation of a Process Safety Management Program (PSM), which is designed to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals (29 CFR 1910.119). This PSM would provide the following preventative components:

- Employee participation plan
- Process safety information
- Process hazard analysis
- Written operating procedures
- Employee training requirements and written training programs
- Inspection and maintenance program to document mechanical integrity
- Preventative maintenance program
- Contractor training requirements
- Hot work cutting and welding permit procedures
- Pre-startup safety review and management of change procedures
- Compliance audit procedures
- External emergency/non-emergency notification
- Facilities training requirements
- Reportable quantities of on-site chemicals.

The project would also be in compliance with EPA Risk Management Planning Rule 40 CFR 68, which would require the facility operator to register the facility with the EPA prior to on-site storage of hazardous chemicals. For security purposes, the desalination facility would allow site access to authorized personnel only via a secured entry point with a 24-hour guard. In addition, all chemicals would be managed in accordance with the California Hazardous Waste Control Law (California Health and Safety Code Division 20, Chapter 6.5) and the Hazardous Waste Control Regulations (CCR, Title 22, Division 4.5).

Project features that are designed to reduce risks associated with chemical use and storage, combined with regulatory requirements for safe handling and storage of materials will minimize hazards associated with operation. As such, the project will not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. In addition, the project site is not within one-quarter mile of an existing or proposed school. Therefore, impacts in regards to the long-term operational use, storage, and transport of hazardous materials involved in desalination facility operation would be less than significant.

In addition, the project applicant has identified the following measures that will be implemented:

- Provide an automatic sprinkler system for indoor hazardous material storage areas;
- Separate incompatible materials by isolating them from each other with noncombustible partition
- Locate incompatible materials as far away from each other as practical and safe
- Provide spill control in all storage, handling, and dispensing areas
- Separate secondary containment for each liquid chemical storage system
- Use chlorine in liquid form (sodium hypochlorite) instead of chlorine gas to mitigate concerns associated with accidental toxic gas plume releases and potential odor emissions from the chlorine storage facility
- Use aqua ammonia of a concentration below the regulatory threshold limit of 20% and amount below the regulatory threshold of 20,000 gallons to mitigate concerns associated with accidental release of toxic ammonia gas plume or measurable size
- Equip all liquid chemical storage tanks with pressure relief valve, vapor equalization, carbon filter vent, and vacuum breaker. Any potential vapor fume releases from the tanks will be absorbed by the carbon filter vent, thereby providing an additional odor control for volatile chemicals such as ammonia and chlorine.

### **Off-Site Pipeline Alignments and Underground Pump Stations**

#### **Proposed Pipeline Alignments**

As stated above, the proposed off-site pipeline alignments would occur adjacent to a variety of land uses, primarily within existing street ROWs and easements. No known areas of hazardous materials exist along the proposed alignments, however, as noted in Section 4.9, mitigation measures have been provided to ensure that any situations involving hazardous materials that may occur during construction are properly handled. In addition, hazardous materials impacts due to long-term operation of the pipelines are not anticipated to occur, as the only liquid proposed for conveyance is potable water.

#### **OC-44 Pump Station**

As stated in Section 3.0, Project Description, two diesel-powered emergency backup electrical generators would be required for underground pump station implementation. Diesel fuel would be stored within an 8,700-gallon, double-walled tank with a diameter of 8 feet and a height of 26 feet. The Orange County Fire Authority, which provides service to the OC-44 pump station site, has no preference for either an aboveground or underground storage tank. However, an underground storage tank would be provided since the entire pump station vault would be located below grade, including the diesel generators. The storage tank would be located nearby but separate from the pump station vault and would feature a double-walled containment system with monitoring

equipment to prevent and detect leakage. The tank would be contained within the surrounding soil and would supply diesel fuel to the generators (housed within the pump station vault) during power emergencies. Refilling of the tank would occur from the surface via filling ports, similar to the refilling process at a commercial gas station.

The proposed 8,700-gallon diesel-fuel storage tank would be placed entirely underground and would be double walled as a preventative measure for leaks and spills. The tank would be buried separate from the underground vault containing the pump station and diesel-fueled emergency backup electrical generators. In addition, monitoring equipment would be provided to prevent and detect leakage. Because the diesel storage tank would be placed underground and adequate safety measures would be implemented, impacts in regards to the off-site use, storage, and transport of hazardous materials are not anticipated to be significant.

#### Coastal Junction, Magnolia, Brookhurst and Bristol Pump Stations

The pump stations would also require the storage of diesel fuel for the operation of one emergency backup electrical generator. Diesel storage capacity for one backup generator would be 1,300 gallons. This diesel fuel would be stored in a similar manner as the OC-44 pump station, and the same safety precautions (i.e., double-walled containment system, leakage monitoring equipment) would be incorporated into the pump station design. Impacts in this regard are not anticipated to be significant.

#### OC-35 Pump Station

Modifications to the existing OC-35 Pump Station would only involve pump replacement, and would not otherwise affect the facility or operations, including storage of hazardous materials. Therefore impacts would be less than significant.

### **SUMMARY OF IMPACTS**

No significant impacts related to hazards and hazardous materials were identified.

### **MITIGATION MEASURES**

None required, other than project design implementation of existing regulations and requirements.

### **UNAVOIDABLE SIGNIFICANT IMPACTS**

None have been identified.

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